



Comparing adult and adolescent transsexuals: An MMPI-2 and MMPI-A study

Annelou L.C. de Vries ^{a,*}, Baudewijntje P.C. Kreukels ^b, Thomas D. Steensma ^b,
Theo A.H. Doreleijers ^a, Peggy T. Cohen-Kettenis ^b

^a Department of Child and Adolescent Psychiatry, VU University Medical Center, Amsterdam, The Netherlands

^b Department of Medical Psychology, VU University Medical Center, Amsterdam, The Netherlands

ARTICLE INFO

Article history:

Received 31 August 2009

Received in revised form 1 May 2010

Accepted 23 July 2010

Keywords:

Transsexualism

Gender identity disorder

Psychological functioning

Adults

Adolescents

ABSTRACT

Sex, sexual orientation and age have been shown to be important in relation to psychological functioning in transsexuals. However, only few studies to date took these factors into account and not earlier have adolescent transsexuals participated. In this study the Minnesota Multiphasic Personality Inventory (MMPI-2 or MMPI-A, respectively) was administered to 293 adults (207 male to female transsexuals (MtFs), mean age 38.04 (range 18.56–65.62) and 86 female to male transsexuals (FtMs), mean age 33.26 (range 18.95–64.30)) and 83 adolescents (43 MtFs, mean age 15.70 (range 13.16–18.70) and 40 FtMs, mean age 15.64 (range 13.05–18.56)) with a gender identity disorder (GID). Of adult MtFs, 33% were categorized as "homosexuals" and 66% as "non-homosexuals". Of adult FtMs, 77% were categorized as "homosexuals" and 33% as "non-homosexuals". Adult FtMs functioned significantly better than MtFs on three clinical scales. Contrary to what is often assumed, no differences in psychological functioning were found in the adult transsexuals with regard to sexual orientation, except on one clinical scale. Most remarkably, significantly more adults with GID scored in the clinical range on two or more clinical scales than adolescents with GID. Therefore, early medical intervention may be recommendable for adolescents with GID.

© 2010 Elsevier Ireland Ltd. All rights reserved.

1. Introduction

A number of studies on transsexual adults have reported a high percentage of psychiatric comorbidity (Langevin et al., 1977; Levine, 1980; Bodlund et al., 1993; De Cuypere et al., 1995; Hepp et al., 2005). In contrast, other studies have shown that psychological functioning of transsexuals is in the non-clinical range (Hunt et al., 1981; Caron and Archer, 1997; Cole et al., 1997; Haraldsen and Dahl, 2000; Miach et al., 2000; Michel et al., 2002; Smith et al., 2005a; Gomez-Gil et al., 2008).

The inconsistent findings on psychopathology and psychological functioning of transsexuals may have been engendered by differences in composition of investigated groups as in most of the studies no distinction with regard to sex, sexual orientation or age was made. First, concerning sex, several studies showed female to male transsexuals (FtMs) function psychosocially better than male to female transsexuals (MtFs) (Fleming et al., 1981; Dixen et al., 1984; Kockott and Fahrner, 1988; Verschoor and Poortinga, 1988; De Cuypere et al., 1995; Cole et al., 1997; Haraldsen and Dahl, 2000; Smith et al., 2005a). In contrast, other studies failed to detect this difference (Hepp et al., 2005; Gomez-Gil et al., 2008) or studied MtFs only (Lutz et al., 1984; Mate-Kole and Freschi, 1988; Miach et al.,

2000). Second, with regard to sexual orientation it is often proposed that a subdivision is made between the "homosexual" (sexually attracted to partners of the same biological sex) and "non-homosexual" (that is "heterosexual", asexual or bisexual) transsexual subtypes (Blanchard, 1985; Blanchard et al., 1987; Smith et al., 2005b) (for a review, see Lawrence (2010)). However, most studies on psychological functioning of transsexuals did not take sexual orientation into account (Cole et al., 1997; Haraldsen and Dahl, 2000; Hepp et al., 2005; Gomez-Gil et al., 2008). Finally, age is an important aspect in relation to psychological functioning of individuals with gender identity disorder (GID) (for a review, see Lawrence (2010)). Studies in small samples of adult transsexuals showed a better prognosis after sex reassignment when individuals requested treatment before age 30 (Lindemalm et al., 1987; Landen et al., 1998). The few studies on even younger transsexuals (adolescents younger than 18 years but not younger than 16 years) showed that they were functioning psychologically within the normal range (Cohen-Kettenis and van Goozen, 1997; Smith et al., 2001).

Given the relatively few studies to date that systematically looked at the role of sex, sexual orientation and age in individuals with GID in relation to psychological functioning, we conducted a study of transsexuals in a wide age range who were considered eligible for sex reassignment. Based on the current literature and clinical experience we hypothesized that MtFs and "non-homosexuals" function less favourably than FtMs and "homosexuals", and that older transsexuals function less favourably than young transsexuals.

* Corresponding author. VU University Medical Center, PO Box 7057, 1007 MB Amsterdam, The Netherlands.

E-mail address: alc.devries@vumc.nl (A.L.C. de Vries).

The present study is the first to compare adolescent and adult transsexuals.

2. Method

2.1. Subjects

The initial subject sample consisted of 391 adult (MtFs: $n = 280$, FtMs: $n = 111$) and 90 adolescent (MtFs: $n = 49$, FtMs: $n = 41$) consecutive referrals to the gender identity clinic at the Amsterdam VU University Medical Center (VUmc). Adults participated in this study between 2000 and 2005 and adolescents between 2000 and 2007. Adolescent data collection continued for two years beyond that of the adults, in order to reach appropriate numbers for the statistical analyses. At the VUmc gender identity clinic 95% of the transsexuals in the Netherlands are diagnosed and treated. Only subjects who fulfilled DSM-IV-TR criteria for GID and who were considered eligible for further medical interventions, were included in this study.

2.2. Procedure

At the VUmc gender identity clinic, assessment and treatment of applicants occur in line with the International Standards of Care of the World Professional Association for Transgender Health (Meyer et al., 2001). A psychologist/psychiatrist evaluates if the patient fulfills the DSM-IV-TR criteria for GID, and assesses eligibility for treatment during the first diagnostic phase. For adolescents between age 12 and age 18, the same procedure is followed. However, puberty suppression may be offered from age 12 on (Cohen-Kettenis and van Goozen, 1998; Cohen-Kettenis et al., 2008). From 16 years on, cross-sex hormones can be prescribed, which constitutes the actual start of the medical sex reassignment. Surgery is only performed after the age of 18.

All data used for this study were gathered during the diagnostic phase. The Minnesota Multiphasic Personality Inventory (MMPI) was collected for clinical assessment and administered by a psychometrist as part of a more extensive psychodiagnostic testing session.

2.3. Measures

2.3.1. Psychological functioning

By using the MMPI we were able to measure psychological functioning of both adults and adolescents, with very similar instruments, the MMPI-2 and the MMPI-A, respectively (Butcher et al., 1989; Butcher et al., 1992).

The MMPI-2 is a widely used questionnaire to assess psychological functioning (Butcher et al., 1989). For this study we used the Dutch translation and Dutch norm scores of the MMPI-2 (Derksemen et al., 1997). The MMPI-2 is a 567-item true-false questionnaire. Psychological functioning is measured by ten clinical scales: Hypochondria, Depression, Hysteria, Psychopathic Deviate, Masculinity/Femininity, Paranoia, Psychastenia, Schizophrenia, Hypomania, and Social Introversion. Higher scores indicate less favourable functioning. The functioning is reflected in *T*-scores. A *T*-score of 50 can be interpreted as a score in the normal range, a *T*-score of 65 or higher can be interpreted as a score in the clinical range (Butcher et al., 1989; Derksemen et al., 1997).

The MMPI-A is an equivalent of the MMPI-2 for adolescents. It consists of 478 true-false items, measuring psychological functioning through the same ten clinical scales as the MMPI-2. Despite similarity in number and names of the clinical scales, the MMPI-A is not fully comparable with the MMPI-2. Four scales consist of different items: Psychopathic Deviate (1 item), Schizophrenia (1 item), Masculinity/Femininity (substantially different item pools), and Social Introversion (substantially different item pools). The other six MMPI-A clinical scales are identical to the MMPI-2 clinical scales: Hypochondria, Depression, Hysteria, Paranoia, Psychastenia, and Hypomania (Shaevel and Archer, 1996). For this study we used the Dutch version of the MMPI-A. The Dutch norm group was 13–18 years, which is one year younger than the original United States norm group (Butcher et al., 1992; van Dijk et al., 2000). Adolescents 13 years of age at the time of the psychometric session filled out the MMPI-A.

Extreme scores on the validity scales were considered to be an exclusion criterion for both the MMPI-2 and MMPI-A data analyses: 1) more than 30 unanswered questions; 2) a Lie scale *T*-score above 80; 3) a Frequency scale *T*-score above 110; and 4) a Correction scale *T*-score above 80.

2.3.2. Sexual orientation

Sexual orientation data were gathered by means of a self developed, semi-structured questionnaire, the biographic questionnaire for transsexuals (see Cohen-Kettenis and van Goozen (1997) and Smith et al. (2005a)). Both adults and adolescents answered the question: "If you were completely free to choose (and your body would not interfere), what partner would you prefer: a man, a woman, no preference for either a man or a woman, a man and a woman, I do not know". According to Blanchard et al. (1987) terminology only if MtFs preferred males or if FtMs preferred females, were they categorized as "homosexual". All other answers led to categorization in the "non-homosexual" group.

2.4. Statistical analysis

Subgroups were compared with regard to sex, sexual orientation, and applicant group (adult or adolescent). Differences in *T*-scores between subgroups were analyzed

by means of independent-sample *t*-tests. Chi-square tests were used to analyze differences in percentages of individuals scoring in the clinical range between subgroups. For adults, we also performed a multivariate analysis of variance (MANOVA) to analyze the interaction effect for sex and sexual orientation.

Adolescents and adults were compared on the above mentioned six clinical scales that are identical in the MMPI-2 and MMPI-A (Shaevel and Archer, 1996). In addition, adult and adolescent transsexuals were subdivided into three groups with regard to the number of scales on which they scored in the clinical range ($T \geq 65$): The first group had no or only one scale in the clinical range, the second group scored on two to three scales in the clinical range and the third group had four or more scales in the clinical range. Differences between adolescents and adults in these three groups were analyzed with Chi-square tests.

Since the Masculinity/Femininity scale refers to stereotypical male and female interests, findings of this scale probably reflect gender dysphoria in this sample, rather than some form of psychopathology (Lothstein, 1984; Miach et al., 2000). We therefore have excluded this scale from all our analyses.

3. Results

Three adult patients and no adolescents were excluded due to extreme scores on the validity scales. Two hundred and ninety-three adults (MtFs: $n = 207$, FtMs: $n = 86$) and 83 adolescents (MtFs: $n = 43$, FtMs: $n = 40$) fulfilled the DSM-IV-TR criteria for gender identity disorder and were considered eligible for sex reassignment. The mean age for adult MtFs was 38.04 (range 18.56–65.62, SD 10.83) and for adult FtMs 33.26 (range 18.95–64.30, SD 8.82), ($t = 3.94$, $df = 193.54$, $p < 0.001$). The mean age for adolescent MtFs was 15.70 (range 13.16–18.70, SD 1.67) and for adolescent FtMs 15.64 (range 13.05–18.56, SD 1.57), ($t = 0.167$, $df = 81$, $p = 0.868$).

Of the 98 adults who were not eligible for sex reassignment, the majority dropped out of the assessment procedure soon after the first session and therefore did not fill out an MMPI. The most common reason was that it had become clear that they would not fulfill GID criteria according to the DSM-IV-TR. Four applicants did receive a GID diagnosis, but gave up on further medical intervention for personal reasons. Four other applicants with a GID diagnosis were not yet eligible at the time of the closure of the data collection and data analyses, but were referred for psychotherapy.

The 7 non eligible adolescents were not diagnosed with a GID.

3.1. Sex

3.1.1. Adults

First, all mean *T*-scores, except for the Psychopathic Deviate scores, were in the non-clinical range (see Table 1). With regard to sex differences, MtFs had significantly higher scores than FtMs on the Depression scale ($t = 3.519$, $df = 291$, $p = 0.001$), the Psychastenia scale ($t = 2.471$, $df = 291$, $p = 0.014$), the Social Introversion scale ($t = 3.193$, $df = 291$, $p = 0.002$), and on a trend level on the Paranoia scale ($t = 1.929$, $df = 291$, $p = 0.055$). When comparisons were made with regard to the percentages of individuals scoring in the clinical range, the percentage of MtFs scoring in the clinical range was significantly higher than that of FtMs on the Depression scale ($\chi^2(1) = 4.080$, $p = 0.043$), the Hysteria scale ($\chi^2(1) = 5.154$, $p = 0.023$), the Psychastenia scale ($\chi^2(1) = 5.352$, $p = 0.021$), and on a trend level on the Social Introversion scale ($\chi^2(1) = 3.790$, $p = 0.052$).

3.1.2. Adolescents

None of the mean *T*-scores of the adolescents were in the clinical range. MtFs scored significantly higher than FtMs on the Hysteria scale ($t = 3.830$, $df = 81$, $p < 0.001$), whereas FtMs had a significantly higher score on the Hypomania scale ($t = -2.723$, $df = 81$, $p = 0.008$) and the Social Introversion scale ($t = -2.220$, $df = 66.990$, $p = 0.030$), in comparison with MtFs (see Table 2). Roughly the same pattern was observed when we calculated the percentages of adolescents who scored in the clinical range (Table 2). A significantly higher percentage of FtMs scored in the clinical range on the Social Introversion scale ($\chi^2(1) = 5.743$, $p = 0.017$), as compared with MtFs (see Table 2).

Table 1

Mean MMPI T-scores and percentages of adult transsexuals who scored in the clinical range.

Scale	Mean MMPI T-scores				Percentages in clinical range	
	MtFs (N=207)		FtMs (N=86)		MtFs (N=207)	FtMs (N=86)
	Mean	SD	Mean	SD	%	%
Hypochondria	53.31	10.43	51.29	9.64	14.0	8.1
Depression	59.43	13.44	* 53.57	11.79	31.4	* 19.8
Hysteria	59.02	13.52	55.80	12.55	27.5	* 15.1
Psychopathic deviate	67.08	11.57	66.80	11.73	58.5	55.8
Paranoia	64.19	10.94	61.38	12.22	52.7	43.0
Psychastenia	62.01	12.13	* 58.29	10.70	41.1	* 26.7
Schizophrenia	62.29	10.41	61.34	10.17	36.7	33.7
Hypomania	51.44	11.77	54.34	12.47	14.0	19.8
Social	55.37	11.71	* 50.52	12.14	24.2	14.0
Introversion						

*Significance $p < 0.05$.

3.2. Sexual orientation

3.2.1. Adults

As the systematic data collection on sexual orientation had started after the MMPI was introduced as part of the standard assessment, this information was only available for 250 adults. Fifty-nine adult MtFs (33%) were categorized in the "homosexual" subgroup and 116 MtFs (66%) in the "non-homosexual" subgroup. In the adult FtMs, 58 (77%) were categorized as "homosexuals" and 17 (33%) as "non-homosexuals".

No differences were found in mean T-scores between the "homosexual" and "non-homosexual" FtMs. Among the MtFs, the "homosexuals" scored significantly higher on the Schizophrenia scale compared to the "non-homosexuals" (mean T-score "homosexual" MtFs 64.58 (SD 11.28), "non-homosexual" MtFs 60.59 (SD 9.29, $t = 2.343$, $df = 98.993$, $p = 0.021$)). There was a significantly higher percentage of "homosexual" MtFs scoring in the clinical range on the Schizophrenia scale than "non-homosexual" MtFs (see Table 3, $\chi^2(1) = 5.782$, $p = 0.016$).

Table 2

Mean MMPI T-scores and percentages of adolescent transsexuals who scored in the clinical range.

Scale	Mean MMPI T-scores				Percentages in clinical range	
	MtFs (N=43)		FtMs (N=40)		MtFs (N=43)	FtMs (N=40)
	Mean	SD	Mean	SD	%	%
Hypochondria	52.33	11.09	50.33	12.04	20.9	17.5
Depression	57.86	11.21	54.78	13.64	20.9	22.5
Hysteria	61.37	8.67	* 52.80	11.61	27.9	17.5
Psychopathic deviate	56.42	10.77	57.35	12.35	23.3	22.5
Paranoia	57.77	9.10	54.20	10.83	18.6	17.5
Psychastenia	50.07	9.34	52.08	13.94	7.0	20.0
Schizophrenia	48.67	9.63	53.43	12.56	11.6	22.5
Hypomania	45.88	8.67	* 51.38	9.70	7.0	10.0
Social	48.67	8.87	* 54.25	13.38	4.7	* 22.5
Introversion						

*Significance $p < 0.05$.

3.2.2. Adolescents

Sexual orientation information was available for all adolescents. Because they were all categorized as "homosexual", no comparisons could be made on this basis.

3.3. Sex and sexual orientation

MANOVA revealed no interaction effects for sex and sexual orientation in adult transsexuals. As all adolescents reported a homosexual orientation, the interaction effect for sex sexual orientation could not be analyzed in this group.

3.4. Adolescents versus adults

On three of the six clinical scales where a direct comparison was possible, adolescent transsexuals scored significantly lower than adult transsexuals: the Paranoia scale (56.05 (SD 10.07) vs. 63.37 (SD 11.39), $t = -5.296$, $df = 374$, $p < 0.001$), the Psychastenia scale (51.04 (SD 11.75) vs. 60.92 (SD 11.83), $t = -6.727$, $df = 374$, $p < 0.001$), and the Hypomania scale (48.53 (SD 9.53) vs. 52.29 (SD 12.03), $t = -2.985$, $df = 163.348$, $p = 0.003$).

When the adult and adolescent transsexuals were compared with regard to the percentage of sex reassignment applicants who scored in the clinical range, significant differences were also found for three of the six scales (see Fig. 1). Higher percentages of adult than adolescent sex reassignment applicants scored in the clinical range on the Paranoia scale (49.8% vs. 18.1%, $\chi^2(1) = 26.641$, $p < 0.001$), and Psychastenia scale (36.9% vs. 13.3%, $\chi^2(1) = 16.662$, $p < 0.001$).

When adults and adolescents were compared with regard to the number of total MMPI scales on which they scored in the clinical range, it appeared that the majority of the adults (62.8%) had above-clinical-range scores on two or more scales (see Table 4). In contrast, the majority of the adolescents (67.5%) scored in the clinical range on none or only one of the subscales ($\chi^2(2) = 24.198$, $p < 0.001$).

4. Discussion

Similar to many other studies in transsexuals using the MMPI, all mean T-scores except one were within the normal range (Hunt et al., 1981; Caron and Archer, 1997; Cole et al., 1997; Miach et al., 2000; Michel et al., 2002; Gomez-Gil et al., 2008). The only exception was the mean Psychopathic Deviate score, which appeared also high or in the clinical range in other studies which used the MMPI (Fleming et al., 1981; Hunt et al., 1981; Cole et al., 1997). In transsexuals, such high scores might be expected, because this scale largely reflects interpersonal difficulties. As transsexualism is a poorly accepted phenomenon (Nutbrock et al., 2009), a negative attitude of the environment to the person who is pursuing sex reassignment may be most severe early in the diagnostic procedure, when the MMPI was administered.

However, when we determined the percentage of individuals scoring in the clinical range, it appeared that 35% of the adult transsexuals scored in the clinical range on more than four clinical scales. This is more in agreement with studies reporting much, rather than little, comorbidity (Langevin et al., 1977; Levine, 1980; Bodlund et al., 1993; De Cuypere et al., 1995; Hepp et al., 2005). It suggests that, despite the overall favourable psychological functioning of transsexuals, there are subgroups with psychopathology that may be related to sex, sexual orientation or age.

In line with several other studies, our adult FtMs functioned psychologically better than adult MtFs (Levine, 1980; Dixen et al., 1984; De Cuypere et al., 1995; Smith et al., 2005a). One of the reasons might be that FtMs, in comparison to MtFs, pass more easily in the opposite gender role. Postoperative psychopathology of FtMs is shown to be associated with difficulties experienced with passing as the new gender (Ross and Need, 1989). Likewise, the absence of sex

Table 3

Percentages of adult transsexuals who scored in the clinical range: homosexual versus non-homosexual subgroups.

Scale	MtFs			FtMs		
	Homosexual (N=59)	Non-homosexual (N=116)	p*	Homosexual (N=58)	Non-homosexual (N=17)	p*
Hypochondria	18.6	9.5	0.084	6.9	11.8	0.515
Depression	32.2	27.6	0.525	17.2	35.3	0.110
Hysteria	33.9	21.6	0.077	15.5	17.6	0.833
Psychopathic deviate	61.0	56.9	0.601	55.2	58.8	0.790
Paranoia	55.9	48.3	0.338	41.4	52.9	0.398
Psychasthenia	44.1	37.1	0.370	29.3	29.4	0.994
Schizophrenia	45.8	27.6	0.016	36.2	35.3	0.945
Hypomania	16.9	13.8	0.579	24.1	11.8	0.273
Social Introversion	23.7	20.7	0.645	12.1	23.5	0.240

*Two-sided Pearson Chi-square, bold emphasis: significance < 0.05.

differences in psychological functioning in our adolescent sample might be associated with their more convincing appearance, as they have not yet developed secondary sex characteristics.

Contrary to our expectations, there appeared to be hardly any differences in psychological functioning between "homosexual" and "non-homosexual" transsexuals. This was unlike what was found in other studies from the same gender identity clinic (Smith et al., 2005a, b). The current study focused on a different sample and hardly any other studies have addressed the relation between sexual orientation and comorbid psychopathology (for a review, see Lawrence (2010)). It could be that "homosexual" and "non-homosexual" transsexuals are after all not so different with regard to their psychological functioning. The reported differences by Smith et al. (2005b) were not very large and Johnson and Hunt (1990) failed to detect differences in psychosocial functioning of transsexuals according to sexual orientation subtype. In transsexual patients who had undergone sex reassignment, the association between homosexual orientation and psychological functioning disappeared when MtFs were evaluated separately from the FtMs (De Cuyper et al., 2005). A classification based on sexual orientation should therefore be used carefully in clinical practice, as the relationship with comorbid psychopathology is less clear than often assumed.

The eminent finding in our study was the poorer psychological functioning of adult applicants for sex reassignment compared to adolescent applicants. This may reflect a better psychological functioning of early-onset (before puberty) as opposed to late-onset (after puberty) transsexualism (Lutz et al., 1984; Smith et al., 2005b). However, it also suggests that it is easier to make a gender role change

around the start of puberty than in adulthood. Young transsexuals might be less harmed by the consequences of their gender dysphoria, such as stigmatization. Moreover, the prospect of puberty suppression may give them confidence that they are being helped, which may be positively related to their psychological well-being (Cohen-Kettenis and van Goozen, 1998; Cohen-Kettenis et al., 2008).

Some limitations of this study warrant comment. Only one question was used to measure sexual orientation, which is probably not precise enough. As sexual orientation consists of various components (romantic attraction, sexual behaviour and sexual identity), people may have responded to different aspects. In addition, sexual orientation can change during a person's lifetime (Savin-Williams and Ream, 2007), and this may be particularly true for young women (Diamond, 2000). Regarding transsexual individuals especially, it could be difficult to identify as "homosexual" or "non-homosexual", as their sexual orientation may be obscured by their gender dysphoric feelings (De Cuyper et al., 2005; Lawrence, 2005).

The study might have been further limited by the fact that no comparison between adults and adolescents could be made on the Psychopathic Deviate, the Schizophrenia, and the Social Introversion clinical scales (Shaevel and Archer, 1996). These scales might be of special interest, as the adults scored the highest on these. Although on two of these three clinical scales the differences between the MMPI-2 and the MMPI-A regarded only one item, a statistical comparison was not possible.

A final limitation is that we did not compare psychological functioning of early-onset (before puberty) versus late-onset (after the start of puberty) GID in our adult group. Previous papers have described this distinction as being relevant since transsexuals reporting childhood gender dysphoria functioned psychologically better than transsexuals who became aware of their gender dysphoria later in life (Lutz et al., 1984; Smith et al., 2005b). Our adult group probably included a fair number of early-onset transsexuals, but in this study we did not take onset age into account as we did not systematically and precisely measure onset age in the adult group.

In conclusion, in accordance with the literature this study shows that MtFs seem to need more clinical attention than FtMs, as the former functioned psychologically worse than the latter. Contrary to expectations, we found no differences in psychological functioning between homosexual and non-homosexual transsexuals. Therefore,

Percentages of transsexuals who scored in the clinical range: adolescents versus adults eligible for sex reassignment on MMPI scales with identical item pools for MMPI-A and MMPI-2.

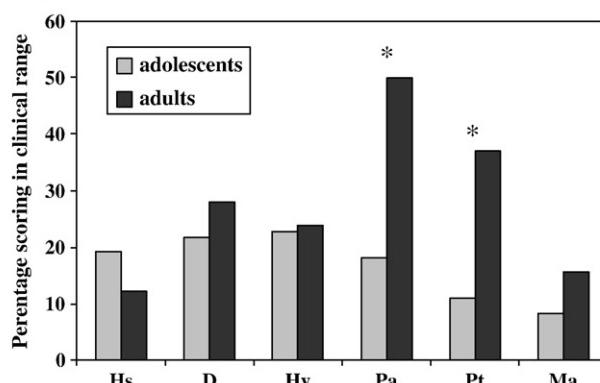


Fig. 1. *Significance p<0.05, Hs = Hypochondria, D = Depression, Hy = Hysteria, Pa = Paranoia, Pt = Psychasthenia, Ma = Hypomania.

Table 4

Percentages of adolescent and adult transsexuals by number of scales in the clinical range.

Number of scales in the clinical range	Adolescents (N=77)	Adults (N=293)	*
0–1	67.5	37.2	*
2–3	15.7	27.3	*
≥4	16.9	35.5	*

*Significance p<0.001.

subdividing transsexuals according to sexual orientation may be clinically less useful than has often been assumed. Most importantly clinicians should be aware that many adolescents function psychologically better than most adult transsexuals. This might affect clinical case management for this age group and suggests that early medical intervention is recommendable, which was offered to the adolescents participating in this study.

Acknowledgments

This study was supported by funding from the Netherlands Organization for Health Research and Development (ZonMw), OOG grant 100-002-028.

References

- Blanchard, R., 1985. Typology of male-to-female transsexualism. *Archives of Sexual Behavior* 14, 247–261.
- Blanchard, R., Clemmensen, L.H., Steiner, B.W., 1987. Heterosexual and homosexual gender dysphoria. *Archives of Sexual Behavior* 16, 139–152.
- Bodlund, O., Kullgren, G., Sundbom, E., Hojerback, T., 1993. Personality traits and disorders among transsexuals. *Acta Psychiatrica Scandinavica* 88, 322–327.
- Butcher, J.N., Dahlstrom, W.G., Graham, J.R., Tellegen, A., Kaemmer, B., 1989. MMPI-2; Minnesota Multiphasic Personality Inventory-2: Manual for Administration and Scoring. University of Minnesota Press, Minneapolis.
- Butcher, J.N., Williams, C.L., Graham, J.R., Archer, R.P., Tellegen, A., Ben-Porath, Y.S., Kaemmer, B., 1992. MMPI-A Manual for Administration, Scoring, and Interpretation. University of Minnesota Press, Minneapolis.
- Caron, G.R., Archer, R.P., 1997. MMPI and Rorschach characteristics of individuals approved for gender reassignment surgery. *Assessment* 4, 229–241.
- Cohen-Kettenis, P.T., van Goozen, S.H., 1997. Sex reassignment of adolescent transsexuals: a follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry* 36, 263–271.
- Cohen-Kettenis, P.T., van Goozen, S.H., 1998. Pubertal delay as an aid in diagnosis and treatment of a transsexual adolescent. *European Child and Adolescent Psychiatry* 7, 246–248.
- Cohen-Kettenis, P.T., Delemarre-van de Waal, H.A., Gooren, L.J., 2008. The treatment of adolescent transsexuals: changing insights. *Journal of Sexual Medicine* 5, 1892–1897.
- Cole, C.M., O'Boyle, M., Emory, L.E., Meyer III, W.J., 1997. Comorbidity of gender dysphoria and other major psychiatric diagnoses. *Archives of Sexual Behavior* 26, 13–26.
- De Cuypere, G., Janes, C., Rubens, R., 1995. Psychosocial functioning of transsexuals in Belgium. *Acta Psychiatrica Scandinavica* 91, 180–184.
- De Cuypere, G., Tsjoen, G., Beerten, R., Selvaggi, G., De Sutter, P., Hoebeke, P., Monstrey, S., Vansteenvagen, A., Rubens, R., 2005. Sexual and physical health after sex reassignment surgery. *Archives of Sexual Behavior* 34, 679–690.
- Derkzen, J.J.L., De Mey, H.R.A., Sloore, H., Hellenbosch, G., 1997. MMPI-2, handleiding bij afname, scoring en interpretatie [MMPI-2: Manual for Administration, Scoring and Interpretation]. PEN Test Publisher, Nijmegen.
- Diamond, L.M., 2000. Sexual identity, attractions, and behavior among young sexual-minority women over a 2-year period. *Developmental Psychology* 36, 241–250.
- Dixen, J.M., Maddever, H., Van Maasdam, J., Edwards, P.W., 1984. Psychosocial characteristics of applicants evaluated for surgical gender reassignment. *Archives of Sexual Behavior* 13, 269–276.
- Fleming, M., Cohen, D., Salt, P., Jones, D., Jenkins, S., 1981. A study of pre- and postsurgical transsexuals: MMPI characteristics. *Archives of Sexual Behavior* 10, 161–170.
- Gomez-Gil, E., Vidal-Hagemeijer, A., Salamero, M., 2008. MMPI-2 characteristics of transsexuals requesting sex reassignment: comparison of patients in prehormonal and presurgical phases. *Journal of Personality Assessment* 90, 368–374.
- Haraldsen, I.R., Dahl, A.A., 2000. Symptom profiles of gender dysphoric patients of transsexual type compared to patients with personality disorders and healthy adults. *Acta Psychiatrica Scandinavica* 102, 276–281.
- Hepp, U., Kraemer, B., Schnyder, U., Miller, N., Delsignore, A., 2005. Psychiatric comorbidity in gender identity disorder. *Journal of Psychosomatic Research* 58, 259–261.
- Hunt, D.D., Carr, J.E., Hampson, J.L., 1981. Cognitive correlates of biologic sex and gender identity in transsexualism. *Archives of Sexual Behavior* 10, 65–77.
- Johnson, S.L., Hunt, D.D., 1990. The relationship of male transsexual typology to psychosocial adjustment. *Archives of Sexual Behavior* 19, 349–360.
- Kockott, G., Fahrner, E.M., 1988. Male-to-female and female-to-male transsexuals: a comparison. *Archives of Sexual Behavior* 17, 539–546.
- Landen, M., Walinder, J., Hamberg, G., Lundstrom, B., 1998. Factors predictive of regret in sex reassignment. *Acta Psychiatrica Scandinavica* 97, 284–289.
- Langevin, R., Paitich, D., Steiner, B., 1977. The clinical profile of male transsexuals living as females vs. those living as males. *Archives of Sexual Behavior* 6, 143–154.
- Lawrence, A.A., 2005. Sexuality before and after male-to-female sex reassignment surgery. *Archives of Sexual Behavior* 34, 147–166.
- Lawrence, A.A., 2010. Sexual orientation versus age of onset as bases for typologies (subtypes) for gender identity disorder in adolescents and adults. *Archives of Sexual Behavior* 39, 514–545.
- Levine, S.B., 1980. Psychiatric diagnosis of patients requesting sex reassignment surgery. *Journal of Sex and Marital Therapy* 6, 164–173.
- Lindemalm, G., Korlin, D., Uddenberg, N., 1987. Prognostic factors vs. outcome in male-to-female transsexualism. A follow-up study of 13 cases. *Acta Psychiatrica Scandinavica* 75, 268–274.
- Lothstein, L.M., 1984. Psychological testing with transsexuals: a 30-year review. *Journal of Personality Assessment* 48, 500–507.
- Lutz, D.J., Roback, H.B., Hart, M., 1984. Feminine gender identity and psychological adjustment of male transsexuals and male homosexuals. *The Journal of Sex Research* 20, 350–362.
- Mate-Kole, C., Freschi, M., 1988. Psychiatric aspects of sex reassignment surgery. *British Journal of Hospital Medicine* 39, 153–155.
- Meyer, W., Bockting, W.O., Cohen-Kettenis, P.T., Coleman, E., Di Ceglie, D., Devor, H., Gooren, L.J.G., Hage, J.J., Kirk, S., Kuiper, A.J., Laub, D., Lawrence, A., Menard, Y., Patton, J., Schaefer, L., Webb, A., Wheeler, C.C., 2001. Standards of Care for Gender Identity Disorders of the Harry Benjamin International Gender Dysphoria Association, 6th ed. <http://www.wpath.org/>.
- Miach, P.P., Berah, E.F., Butcher, J.N., Rouse, S., 2000. Utility of the MMPI-2 in assessing gender dysphoric patients. *Journal of Personality Assessment* 75, 268–279.
- Michel, A., Ansseau, M., Legros, J.J., Pitchot, W., Cornet, J.P., Mormont, C., 2002. Comparisons of two groups of sex-change applicants based on the MMPI. *Psychological Reports* 91, 233–240.
- Nuttbrock, L., Hwahng, S., Bockting, W., Rosenblum, A., Mason, M., Macri, M., Becker, J., 2009. Psychiatric impact of gender-related abuse across the life course of male-to-female transgender persons. *Journal of Sex Research* 1–12.
- Ross, M.W., Need, J.A., 1989. Effects of adequacy of gender reassignment surgery on psychological adjustment: a follow-up of fourteen male-to-female patients. *Archives of Sexual Behavior* 18, 145–153.
- Savin-Williams, R.C., Ream, G.L., 2007. Prevalence and stability of sexual orientation components during adolescence and young adulthood. *Archives of Sexual Behavior* 36, 385–394.
- Shaevel, B., Archer, R.P., 1996. Effects of MMPI-2 and MMPI-A norms on T-score elevations for 18-year-olds. *Journal of Personality Assessment* 67, 72–78.
- Smith, Y.L., van Goozen, S.H., Cohen-Kettenis, P.T., 2001. Adolescents with gender identity disorder who were accepted or rejected for sex reassignment surgery: a prospective follow-up study. *Journal of the American Academy of Child and Adolescent Psychiatry* 40, 472–481.
- Smith, Y.L., Van Goozen, S.H., Kuiper, A.J., Cohen-Kettenis, P.T., 2005a. Sex reassignment: outcomes and predictors of treatment for adolescent and adult transsexuals. *Psychological Medicine* 35, 89–99.
- Smith, Y.L., van Goozen, S.H., Kuiper, A.J., Cohen-Kettenis, P.T., 2005b. Transsexual subtypes: clinical and theoretical significance. *Psychiatry Research* 137, 151–160.
- van Dijk, J.S., Cornelissen, A.J., Derkzen, J., 2000. MMPI-A, handleiding bij afname, scoring en interpretatie [Manual for the Assessment, Scoring and Interpretation of the Dutch MMPI-A]. PEN Tests Publishers, Nijmegen.
- Verschoor, A.M., Poortinga, J., 1988. Psychosocial differences between Dutch male and female transsexuals. *Archives of Sexual Behavior* 17, 173–178.